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RFID Trends

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Radio frequency identification (RFID) tags are extremely small electronic devices that are comprised of a microchip and antenna. These devices send out small amounts of information when activated. Retailers are excited about this technology as it gives them the ability to forget about barcode scanning. Employees can quickly scan an entire pallet of goods and record the information.

An RFID tag can be designed in one of several different ways including:

- **Active:** Active tags have a battery or power source which is used to power the microchip.
- **Passive:** These devices have no battery. They are powered by a RFID reader. The reader generates an electromagnetic wave which induces a current in the RFID tag.
- **Semi-Passive:** These hybrid devices use a battery to power the microchip but transmit by harnessing energy from the reader.

What's Driving RFID Development?

What's driving the development of RFID tags is the desire to increase the efficiency of wholesale and retail supply chains. While the data capacity of RFID devices remains small, normally from a few bytes to several kilobytes, they offer businesses a wealth of information. If development of this technology proceeds as planned, RFID tags could someday allow retailers to add up the prices of purchased goods as shoppers leave the store and deduct the charges directly from the customer's credit card.

Another advantage of these devices is in the inventory and audit process. Current technology requires each item to be counted by hand. In the future, RFID readers strategically placed throughout the store would automatically determine the amount and type of product sitting on the stores shelves.

Who Will Be the First to Aggressively Implement this Technology?

Wal-Mart is the largest retailer to implement this RFID technology. The company has asked its top suppliers to begin embedding cartons and pallets of goods with RFID tags. This retailing giant believes the technology will enable them to better manage their supply chain. Products entering the warehouse won't need to be opened and bar-coded. Once at the store, products that may have disappeared in the back will be immediately noticed. Stockers will no longer be required to troll

the aisles looking for items that need to be stocked. RFID readers will provide the stockers with lists of what products need to be stocked throughout the store. Even that VCR that got ditched in the cold foods section can be retrieved and returned to its proper place on the shelf!

Other Uses for RFID

Seeing that some of these devices are less than one-half the size of a grain of rice, their placement possibilities are endless. In response to a growing rabies problem, Portugal has passed a law that all dogs be embedded with RFID devices. It's expected that over two million devices will be used for this purpose. The FDA has approved a RFID tag that will be used to prevent the possibility of wrong-site, wrong-procedure, and wrong-patient surgeries. Government officials have advocated these devices become standard issue for individuals that work as firemen, policemen, or emergency rescue individuals as their jobs place them in situations where their identification could be lost or destroyed.

RFID Security Concerns

Not everyone is an advocate of RFID technology. Some individuals worry that the tags will not be disabled once they leave the store that uses the devices. Others fear that the devices will be used to track their movements and use this information to build individual profiles that will be sold to advertisers, marketers, and others. That's not too hard to believe as the news has been full of reports of identity theft and other types of personal information leakage.

Other concerns are focused on the devices themselves. Security experts have proven the devices can be hacked. Lukas Grunwald, a RFID expert, has developed a software program that allows individuals to reprogram RFID tags. While developed primarily as a proof of concept tool, it demonstrates the harsh reality that these tags could be hacked and reprogrammed to allow individuals to pass off high-priced goods at a lower cost as they checkout in self-service lanes. Some even fear that high-tech thieves may someday be able to park outside of your house and scan to determine if you have anything worth stealing.

Despite the potential of RFID technology, many hurdles remain. The cost of the devices must decrease for manufacturers and retailers to use them on less-expensive items. RFID implementations must also address the individual's security concerns. Some customers are worried that these devices may continue to work beyond the confines of the local market, while others worry that hackers may be able to someday scan homes and identify a person's belongings. However, the fact is that development will continue and privacy concerns will eventually be addressed. In the certification arena, CompTIA is working with six organizations to develop a vendor-neutral RFID certification, while SAP already offers an RFID-related certification and has issued its first certificate. As RFID devices become more widely used, there will also be a need for backend IT

management. This means the possibility of increased job opportunities for IT professionals, which leads to more jobs and that's definitely a plus in our industry!

About the Author

Michael C. Gregg is the COO of Superior Solutions, Inc., a security assessment and training firm. His current responsibilities include performing security assessments and evaluations for corporate and government entities. He has served as the developer of high-level security classes, study guides, has taught classes for many Fortune 500 companies and contributed to many books, including the Syngress publication, *Hack the Stack*.